REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-42, 47, and 48 are presently active; Claims 1, 8, 19, 25, 27, 33, 35, 41, 47, 48, and 49 have been presently amended, Claims 43-46, 49, and 50 having been withdrawn by a Restriction Requirement.

In the outstanding Office Action, Claims 1-24, 41, 42, 47, and 48 were rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Claims 1, 7, 8, 11-16, 25, 27, 33, 35, and 47 were rejected under 35 U.S.C.§ 103(a) as being unpatentable over U.S. Publication No. 2003/0055523 to Bunkofske et al in view U.S. Publication No. 2002/0107858 to Lundahl et al and further in view of U.S. Publication No. 2005/0055175 to Jahns et al. Claims 2-6, 19-23, 26, and 34 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bunkofske et al in view of Lundahl et al, and Jahns et al and further in view of U.S. Pat. No. 6,622,059 to Toprac et al. Claims 9, 10, 28, and 36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bunkofske et al in view of Lundahl et al, and Jahns et al and further in view of U.S. Pat. No. 5,796,606 to Spring. Claims 17, 18, 29-32, 37-42, and 48 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bunkofske et al in view of Lundahl et al and Jahns et al and further in view of U.S. Publication No. 2003/0144746 to Hsiung et al. Claim 24 was rejected under 35 U.S.C. § 102(a) as being unpatentable over Bunkofske et al, Lundahl et al, Jahns et al, and Toprac et al in view of U.S. Pat. No. 5,796,6007 to Spring.

Regarding the statutory rejection, the claims have been amended to define the tangible result achieved in the presently claimed inventions. Hence, it is respectfully submitted that presently amended Claims 1-24, 41, 42, 47, and 48 define statutory subject matter.

Regarding the rejections on the merits, the independent claims have been amended to

clarify the Applicant's use of adjusted centering coefficients to determine at least one statistical quantity from the initial PCA model. More specifically, the independent claims presently define determining at least one statistical quantity using a combination of the initial PCA model and the additional data that has been centered by the updated adaptive centering coefficients.

The outstanding Office Action relies on Lundahl et al for its teaching of centering and scaling model-based control. However, Lundahl et al does not disclose or suggest the scaling procedure defined in the present claims. At most, Lundahl et al disclose at numbered paragraph [0060] that scaling a matrix Y refers to the division of each entry in a given column by the sample standard deviation of that column. This is a procedure performed every time a PCA model is constructed. Such a disclosure does not disclose or suggest the claimed determination of at least one statistical quantity using a combination of the initial PCA model and the additional data that has been centered by the updated adaptive centering coefficients.

The outstanding Office Action acknowledges on page 6, lines 15-21, that Bunkofske et al do not teach acquiring additional data from the processing system to form an adjusted centering coefficient. Without a teaching in Bunkofske et al for an adjusted centering coefficient, the deficiencies in Lundahl et al are also not overcome by Bunkofske et al.

The Office Action applies Jahns et al for its teaching of industrial process fault detection using principle component analysis (PCA). Jahns et al do disclose normalization procedures in numbered paragraphs [0051] – [0053] that utilize standard deviation calculations. Therein, Jahns et al disclose that normalization is accomplished by dividing each scalar standard deviation value σ_i for a particular model by an average standard deviation value $\sigma_{average}$ for that model. Like Lundahl et al, this is a procedure performed every time a PCA model is constructed. Accordingly, Jahns et al recalculate and reproduce a principal components model and therefore do not determine at least one statistical quantity using a

combination of the *initial* PCA model and the additional data that has been centered by the updated adaptive centering coefficients. Thus, the deficiencies in <u>Lundahl et al</u> are also not overcome by <u>Jahns et al</u>.

Hence, a combination of <u>Bunkofske</u>, <u>Lundahl et al</u>, and <u>Jahns et al</u> would not produce or suggest the claimed invention.

Thus, Claims 1, 19, 25, 33, 41, 47, and 48 and the claims dependent therefrom are believed to patentably define over the references in the outstanding Office Action.

Consequently, in view of the present amendment and in light of the above discussions, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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